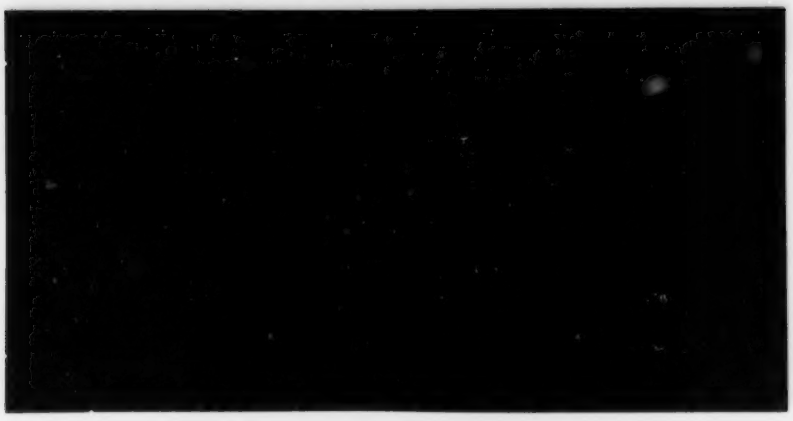


SWEEP

SOIL AND WATER

ENVIRONMENTAL

ENHANCEMENT PROGRAM

PAMPA

PROGRAMME D'AMÉLIORATION

DU MILIEU PÉDOLOGIQUE

ET AQUATIQUE

Canada

Ontario

SWEEP

is a $30 million federal-provincial agreement, announced May 8, 1986, designed to improve soil and water quality in southwestern Ontario over the next five years.

PURPOSES

There are two interrelated purposes to the program; first, to reduce phosphorus loadings in the Lake Erie basin from cropland run-off; and second, to improve the productivity of southwestern Ontario agriculture by reducing or arresting soil erosion that contributes to water pollution.

BACKGROUND

The Canada-U.S. Great Lakes Water Quality Agreement called for phosphorus reductions in the Lake Erie basin of 2000 tonnes per year. SWEEP is part of the Canadian agreement, calling for reductions of 300 tonnes per year — 200 from croplands and 100 from industrial and municipal sources.

PAMPA

est une entente fédérale-provinciale de 30 millions de dollars, annoncée le 8 mai 1986, et destinée à améliorer la qualité du sol et de l'eau dans le Sud-ouest de l'Ontario.

SES BUTS

Les deux buts de PAMPA sont: en premier lieu de réduire de 200 tonnes par an d'ici 1990 le déversement dans le lac Erie de phosphore provenant des terres agricoles, et de maintenir ou d'accroître la productivité agricole du Sud-ouest de l'Ontario, en réduisant ou en empêchant l'érosion et la dégradation du sol.

SES GRANDES LIGNES

L'entente entre le Canada et les États-Unis sur la qualité de l'eau des Grands Lacs prévoyait de réduire de 2 000 tonnes par an la pollution due au phosphore dans le bassin du lac Erie. PAMPA fait partie de cette entente qui réduira cette pollution de 300 tonnes par an — 200 tonnes provenant des terres agricoles et 100 tonnes provenant de sources industrielles et municipales.

THE 1989/90 ANNUAL PROGRESS REVIEW OF THE SOIL AND WATER ENVIRONMENTAL ENHANCEMENT PROGRAM (SWEEP)

PREPARED FOR: The SWEEP Management Committee

BY: The SWEEP Evaluation Committee

August 24, 1990

100-05244/

SWEEP

THE SOIL AND WATER
ENVIRONMENTAL ENHANCEMENT PROGRAM

Agriculture Development Branch
Unit 104, 450 Speedvale Ave. West
Guelph, Ontario
N1H 7Y7
(519)763-5433

6550-1-1-5C

August 29, 1990

Memorandum to: SWEEP Management Committee Members

Re: Attached Report

Attached please find the 1989/90 Annual Progress Review of SWEEP prepared by the SWEEP Evaluation Committee.

Should you have any questions or comments regarding this report please contact me at your convenience.

Michael A. Hicknell
SWEEP Development Officer

:jo

cc. SWEEP Working Committee members

Canada

Ontario

RECOMMENDATIONS TO MANAGEMENT COMMITTEE

1. The 1989/90 Annual Review has identified an information gap experienced by the farming community. In order to provide more effective data to farmers, it is recommended that:

   * **efforts be focused on incorporating SWEEP research into 'recipes' targeted at a variety of farm operations and cropping systems**

   * **information be separated by soil type in order to be of practical use to farmers in different climates and management conditions.**

2. Review findings suggest that there are still some areas of research that could be further explored to better assist in the technology transfer process. With this in mind, it is recommended that:

   * **TED ensure that all research initiated is not only practical to the farming community, but economically feasible as well**

   * **more emphasis be put on economic data, especially with regard to cost issues involved in the adoption of conservation tillage practices**

   * **research efforts continue to work towards developing systems suitable on various soil types such as the clay areas in Kent, Essex, and Lambton counties**

   * **attempts continue to be made to discover effective ways of encouraging stewardship on rental land.**

3. Efficient coordination amongst SWEEP agencies is vital to the success of the entire SWEEP program. To further enhance information transfer, it is suggested that:

   * **the coordination of report scheduling be improved between all SWEEP agencies, and reporting duties be clarified and redefined if necessary**

   * **a <u>continuous</u> communication flow be maintained between TED and provincial field staff to facilitate efficient technology transfer to the farming community.**

4. In order to improve the administrative and monitoring aspects of the entire SWEEP program, it is recommended that:

   * **sub-programyear-endcontinue to be the inception date for the SWEEP Annual Review**

   * **a Mid-TermEvaluation be initiated by the Evaluation Committee as set out in the SWEEP Management Committee's Terms of Reference. An objective consultant should conduct the Evaluation, with the monitoring and establishment of the project Terms of Reference and project administration under the purview of the Evaluation Committee**

   * **new federal-provinciallinkages be established to ensure future effectiveness of SWEEP in the remaining program years.**

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The 1989/90 Soil and Water Environmental Enhancement Program (SWEEP) Annual Review evaluated progress in achieving SWEEP's overall goals through analysis of in-house data and interviews with sub-program managers. As recommended in last year's annual review, the revision of the evaluation issues, and the timing of the review, facilitated data collection quite well. This Annual Review emphasizes a more subjective, qualitative analysis of progress than previous reviews. Sub-program managers were very cooperative with the entire data collection process.

Overall, the SWEEP program has continued to achieve yearly success. In attempting to encourage awareness of conservation practices, SWEEP has succeeded in educating the farming community and 1989/90 activities have provided an improved information base which should further aid extension personnel in their work efforts.

SWEEP appears to be making appropriate progress towards its main mandates. Farmer appreciation and awareness of soil degradation and water quality issues intensified throughout 1989/90. With increased adoption of conservation practices, SWEEP research has provided significant results which act as sound technical support for SWEEP field staff. Under the Canada-Ontario Agreement on Great Lakes Water Quality, the Non-Point Source Committee is responsible for the actual determination of progress towards the 200 tonnes/year reduction of phosphorous loadings into the Lake Erie basin. While precise measurements have yet to be made, the Non-Point Source Committee is optimistic that this overall goal will be achieved.

Through the Local Demonstration sub-program, 22 Tillage-2000 research plots, and 120 side-by-side demonstrations were monitored in the SWEEP area throughout 1989/90. As a result of the increased farmer interest for these plots, larger acreage in this area continues to be committed to conservation practices.

The provincial component of SWEEP finished its commitment as of March 31, 1990. Future funding under alternative programs is expected in order to continue conservation activities. The federal constituent has a remaining two years, and will be completed as of March 31,1993. The disparate timing of the federal-provincial partnership has contributed to some communication inefficiencies within SWEEP, and has created some obstacles to efficient information flow to provincial field staff and the farming community. While considered a setback, these problems have not been insurmountable. Approximately one-fourth of the total $30 million committed to the SWEEP program remains.

There continues to be a need for improved economic data relating to conservation practices. While financial reasons are being perceived as the primary barrier to adoption of such practices, additional research in this area could be beneficial to farmers (1). The development of successful systems geared to specific regions and management conditions could be of further assistance to the farming community. With this in mind, improved conservation practices for clay soils would be of particular interest, as well as

specific recommendations geared to different farming operations. Incorporating SWEEP research into various "recipes" targeted at a variety of farm types could further enhance extension efforts. Meeting these challenges, coupled with improved information flow between sub-programs as well as to the farmer should facilitate the opportunity for further benefits.

INTRODUCTION

Completing the fourth year of operation in 1989/90, the Soil and Water Environmental Enhancement Program (SWEEP) continued to work towards the overall goals as announced May 8, 1986. The main mandates of SWEEP under the Canada-US Great Lakes Water Quality Agreement are to decrease phosphorus loadings by 200 tonnes/year in Lake Erie from cropland run-off during a five year period beginning in 1986, and to improve soil productivity through reduced soil erosion. While initiated as a provincial and federal partnership, the provincial component of SWEEP completed its five year responsibility as of March 1990. Delayed initially, the federal component has two years remaining, and will end March 31, 1993, as agreed through the SWEEP Amending Agreement # 1 signed August 2, 1988 (2).

Like the third annual review of SWEEP, this report is intended to evaluate the progress of the program in meeting overall objectives. Any deviations that may hinder goal accomplishment will be identified and reported to the Management Committee.

Following recommendations from the previous annual review, the evaluation framework for the 1989/90 Annual Review has undergone some revision. As stated in the 1988/89 Progress Review of SWEEP, the goal of a 200 tonnes/year phosphorous reduction will not be directly measured under SWEEP (3). Emphasis in this evaluation has been placed on SWEEP's success in reducing soil degradation as well as increasing awareness of conservation practices.

Data collection procedures involved perusal of in-house data followed by interviews with sub-program managers. For ease of discussion, the following review is organized by sub-program. It should be noted, however, that while divided in such a manner, the intention of this review is to assess the progress of SWEEP as a whole.

SUB-PROGRAM 1

Conservation Information Bureau
Socio-Economic Evaluation
Technology Assessment Panel

The Conservation Information Bureau completed its first full year of operation during the 1989/90 fiscal year. To date the Bureau has developed and distributed 4 newsletters,and 2 information sheets to interested members of the general public, as well as 13,000 bookmarks, and 500 "Green and Growing" pamphlets to children at various schools. The sub-program has received $250,000 of the $1 million that has been committed to it over the total five year period, and appears to be efficiently disseminating pertinent conservation information.

Due to a change in managerial leadership of the Socio-Economic Evaluation sub-program, the 1989/90 fiscal year was spent gathering information and identifying issues

of high priority. With limited funds remaining, the sub-program hopes to allocate its expenditures to research areas of greatest impact. A private consultant has been contracted to compile an annotated bibliography of studies investigating North American socio-economic factors of soil and water conservation, and to identify research gaps. While originally scheduled to be completed in March 1990, the study is still in progress. Occasional workshops and continuous monitoring of research gaps should assist in targeting priority issues and should facilitate efficient allocation of program funds.

The Technical Assessment Panel is investigating the possibility of the development of "recipes" geared to different farm operations. Since the Panel feels that the benefits of conservation tillage are now obvious, the sound information base that SWEEP presently has is quite adequate. Field staff input indicates that the opportunity exists to actively use this data base to design practical methods which could help the farming community in a more effective manner (4).

SUB-PROGRAM 2

Farm Level Economic Analysis
Technical Evaluation and Development (TED)

The "1989 Economic Evaluation of Tillage-2000 Demonstration Plot Data" by Deloitte and Touche was completed for the Farm Level Economic Analysis sub-program. The analysis suggests that for the 63 soybean fields and 28 spring grain plots, no-till and reduced tillage practices generated less returns than conventional practices. Weed pressure may play a major role in this situation. In the 109 grain corn fields however, net returns from no-till were equivalent to conventional tillage and even surpassed reduced tillage when current market values were used. (See Appendix A for a detailed analysis of returns for the various tillage systems.)

The TED component of SWEEP has continued with extensive research activities this year, and appears to be progressing as scheduled. During the 1989/90 fiscal year thirteen projects were completed under SWEEP, and six new ones were initiated. Six additional projects were on-going throughout the year, and will be completed in the near future. An overcommitment of available funds in 1989/90 has necessitated more vigilance in project expenditures for the remaining SWEEP years.

Officials involved in TED feel that research carried out by universities for the sub-program has proved much more in-depth and of much better quality than that provided by the private sector. While some consultant proposals have been of excellent quality, the actual implementation of some of the projects has fallen short of the original expectations.

Although not yet optimal for accurate results, weather experienced during the year provided improved chance for data collection, quite unlike the drought conditions the previous year. The final reports for projects completed in 1989/90 are expected during the summer months of 1990. Those involved are quite pleased with the progress thus far.

As a result of TED's projects, problems associated with conservation tillage have turned out to be less significant than originally thought. Furthermore, projects with less than optimal results have encouraged a search for alternatives, thereby increasing the SWEEP information base.

The TED sub-program has been quite open to farmer's suggestions and input. While some projects have not yielded encouraging results, they were initiated due to farmer interest, and suggest a willingness on TED's part to encourage cooperation and communication with the farming community.

It appears that there may be an over-emphasis of soil quality projects, at the expense of water quality research. It is the opinion of those involved with TED that water quality issues will be addressed as an indirect outcome of improved soil structure. Some concern may also exist as to the consistency of some projects with SWEEP's mandate. The "Loss of Nitrogen by Microbial Denitrification and Nitrification" study, for example, may be a valid research issue, but it does not address the phosphorus component of SWEEP, and its relevance under the SWEEP program is questionable.

SUBPROGRAM 3

Pilot Demonstration Watersheds

The Pilot Demonstration Watersheds sub-program has continued to experience growth and progress in attempting to address both the production and water quality aspects of conservation farming practices. Adequate results were achieved in 1989/90 research, and the sub-program now has some good water quality and residue data to offer to the farming community. As well, new economic data offers a beneficial alternative to the yield data that has typically been available. Even better results are expected in 1990 due to the greater occurrence of precipitation events experienced thus far.

The importance of soil and water quality issues continues to gain support from cooperators in the watershed areas. Phosphorous reduction has been emphasized and farmers are becoming aware of overfertilization risks. While the transfer of information has been somewhat slow, improved trust with cooperators should accelerate extension efforts. Farmers were originally somewhat hesitant to adopt conservation practices, but they are now more keen to expand their acreage in the project. Through successful results on their farms, it is hoped that these late adopters will gain confidence in new farming methods, and transfer the information through word of mouth.

There have been various levels of enthusiasm amongst the three watersheds. The Essex Watershed has been very quick to adopt conservation practices, perhaps due to the common erosion problems associated with clay soils. The Pittock Watershed has been somewhat less keen, but there has been a noticeable increase in enthusiasm in 1989/90. Officials involved feel that the Kettle Creek Watershed has been the 'showcase' of the sub-program so far, with very good results and farmer response.

While farmers are beginning to realize their responsibility to their land, the Pilot Demonstration Watersheds sub-program is still finding it difficult to encourage stewardship on rental land. Trends predict fewer but larger farms, and this may present a greater challenge in the future as farm land rental becomes more common.

SUBPROGRAM 4

Local Demonstrations

Of the 36 provincial Tillage-2000 plots, 22 are located in the SWEEP area. This sub-program is also involved with 120 side-by-side demonstrations. Farmer participation and interest is increasing, and the conservation tillage systems have proven fairly successful on the sandy and loamy soils. A future challenge remains to develop a successful system on clay soils for counties such as Kent, Lambton, and Essex.

Yields obtained in 1989 were lower than the previous year (5). Generally speaking, the 1989 growing season highlights suggest conservation tillage systems had lower yields compared to conventional tillage systems for both grain corn and soybeans. Winter wheat was planted on only two sites, and at both sites conservation tillage produced higher yields.

While no-till yields for grain corn were 3 percent lower than moldboard tillage (126.8 bu/ac vs. 131.0 bu/ac), previous economic analysis suggests that a savings of up to $12 per acre for no-till can be experienced due to lower inputs of time, fuel and machinery operations (6). An extended time-frame for this project, combined with more sites would be advantageous in order to make specific recommendations with a known degree of accuracy. (See Appendix B for specific yield results in tillage system comparisons.)

SUBPROGRAM 5

Technical Assistance

Aided by several Ontario Ministry of Agriculture and Food branches, the Plant Industry Branch, the Agriculture Representative Branch, and the Agriculture Engineering Service, the Technical Assistance sub-program provided substantial extension services to farmers in 1989/90. Eleven soil advisors conducted over 3000 farm visits and provided advice on conservation practices.

The continued enthusiasm of farmers involved with this sub-program is encouraging. The importance of conservation tillage has been realized and the adoption rate for these practices is presently more frequent than it was prior to the initiation of SWEEP. The Land Stewardship program, as well as improved media coverage on water quality and soil

protection issues are thought to be substantial factors in this escalating interest. Additionally, agribusiness has continued to play a dynamic role through increased availability of conservation tillage equipment, as well as innovative fertilizer and herbicide technology.

The disparate time lines of the federal and provincial components of SWEEP have provided some obstacles to the efficient implementation of this sub-program. While the information provided by federal research is quite sound, it is felt that the flow to provincial field staff is poor and not readily available at the time it is needed. In addition, some of the research is site specific, and may not apply across the SWEEP area. Although long-term research data has been quite useful in the technology transfer process, extension staff may not have enough valid research information that applies to all farm types. Recommendations for farmers on the relationship between various systems and the specific farming enterprise would be optimal.

While interest in conservation tillage is encouraging, the actual adoption of conservation practices still faces strong barriers. First and foremost is the perceived cost of the adoption process (7). Valid or not, this obstacle exists whether it is an issue of buying new equipment or simply modifying existing equipment. Farmers continue to equate yield to returns and consequently the perceived economic implications of conservation tillage may hinder adoption. Tillage-2000 addresses this issue and is attempting to emphasize both the monetary and non-monetary benefits of conservation practices. As well, the challenge of overcoming "tradition" and attempting to change attitudes is still quite obvious. While sub-program staff have excellent technical skills, additional understanding of the adoption process may be necessary in order to change the way people think. As cooperators tend to be younger and better educated, more technology transfer education may be beneficial in reaching late adopters. (See Appendix C for extended list of barriers that may exist to the adoption of conservation tillage practices.)

Although the provincial component of SWEEP ended March 31, 1990, Tillage-2000 will continue in 1990/91 in order to produce a full five years of field data.

SUB-PROGRAM 6

Soil Conservation Incentives

Ontario Soil Conservation and Environmental Protection Program (OSCEPAP) funds support environmental protection projects such as manure storage structures, milk house/milking wash water disposal systems, and pesticide handling facilities. Soil conservation projects assisted by OSCEPAP include grassed waterways, drop structures, catch basins, and tile outlet protection.

A brief summary of 1989/90 SWEEP area grants under OSCEPAP is as follows:

	environmental protection	soil conservation
Number of projects	175	351
Money paid out	$817,770	$962,919

All available dollars for 1989/90 were originally allocated, but due to slippage only 75 percent of funds were delivered. Some environmental protection structures were incomplete by year end, and 290 projects remained outstanding as of March 31,1990. Of the 583 soil conservation projects in Ontario, 351 of them (60%) were in the SWEEP area and received 51 percent of total provincial money. Similarly, of the 346 environmental protection projects, 175 of them (51%) were in the SWEEP area, and accounted for 47 percent of total provincial money (8).

From April 1986 to March 1990, the Soil Conservation Incentives program provided approximately $8.3 million in grants towards the construction of projects valued at $25.1 million. Appendix D summarizes sub-program expenditures by county.

SUB-PROGRAM 7

Administration, Monitoring, and Public Information

The second "Cropping Tillage and Land Management Practices Survey" originally scheduled for 1990 has been rescheduled for 1991 in order to provide a cropping season number consistent with the first survey of 1986. While funding for this project will be received from federal sources, SWEEP's provincial agencies will maintain their commitment to the program by assisting in the administration and monitoring of the project.

Progress towards the goal of a 200 tonne/year reduction of phosphorous loadings into Lake Erie from non-point sources has produced some confusion. While actual measurement is the responsibility of the Non-Point Source Committee, the SWEEP Evaluation Committee feels that the SWEEP Annual Progress Review should report on progress towards the goal on a yearly basis. The SWEEP Management Committee has suggested that this goal is measurable only at program completion, but the Evaluation Committee feels that an annual update could better identify any deviations in progress towards achieving SWEEP's overall goal.

SWEEP ORGANIZATIONAL OVERVIEW

The organizational structure of the SWEEP program is quite extensive. With 7 sub-programs and 5 committees overseeing SWEEP activities, the possibility exists for communication breakdown. (See Appendix E for organizational chart.) Few problems have been encountered up to this point, but clarification of agency responsibilities may be beneficial in order to enhance future sub-program interaction.

Inefficient information flow has been experienced by some people working within the SWEEP organizational structure. Initial poor activity scheduling may be attributed to this lack of coordination, but improved communication between SWEEP participants may help overcome this problem. Clarification of report date expectations, and improved coordination of reporting duties, could further assist in the development of a more coordinated federal-provincial effort. Committee Terms of Reference may have to be updated and revised in order to facilitate information transfer and sub-program harmonization.

Following the completion of SWEEP's provincial component in March 1990, the Treasurer of Ontario committed $48 million for soil conservation initiatives in the province over the next four years. While 1989/90 funding for the existing Land Stewardship program is included in this allocation, the remainder is available for new opportunities. Details of Land Stewardship II were announced by the provincial government on August 7, 1990.

The completion of the provincial component of SWEEP could have some unforeseen implications. As it is unlikely that existing programs will continue under the SWEEP name, concerns exist as to the ramifications this may have for the entire SWEEP program. The farming community is presently familiar with the SWEEP program, and the image it portrays. The development of new soil and water conservation programs under unfamiliar names could confuse farmers and have an adverse effect on meeting SWEEP's overall mandates.

While the intention of provincial agencies is to continue their involvement with SWEEP activities as much as possible, some concern may exist as to actual incentive for provincial input. Interaction between federal and provincial agencies is expected to continue, but these linkages must be maintained and enhanced in order to provide the farming community with the benefits of future federal SWEEP research. The valuable extension services provided by provincial agencies should be continued in the remaining SWEEP years.

CONCLUSIONS

The SWEEP program seems to be progressing well towards its overall goal. While the delay in the initiation of the federal component was an obstacle to efficient technology and information transfer, farmer enthusiasm for conservation practices remains high, and

technology transfer continues to improve. The final outcome will not be known until program completion in 1993, but the 1989/90 Annual Review suggests substantial headway in moving towards SWEEP's overall mandates. Approximately one-fourth of the total $30 million committed to the SWEEP program remains. (See Appendix F for an overview of SWEEP expenditures.)

The five year time frame of SWEEP is considered sufficient in many aspects, but an extended program of up to ten years is seen by many as improving the validity of SWEEP's scientific data.

Some concerns presently exist regarding the representativeness and validity of SWEEP data. Given the brief time frame of the program, as well as the poor weather conditions, less than optimal data collection has resulted in questionable data validity. While these circumstances cannot be changed, it may prove beneficial to note this fact when transferring information to the public.

The completion of SWEEP's provincial component has necessitated the enhancement of federal-provincial linkages. Continued efficient technology transfer will play a vital role in achieving stated goals. Improved communication to field staff and the farming community will further enhance the adoption of conservation practices, and improve the overall success of SWEEP.

APPENDIX A

Summary of Yield and Financial Returns to Alternative Tillage Practices for Specific Analysis and Crop Situations

Crop & Analysis Situation	Yield	Material Costs	Gross Margin	Net Returns	Net Returns to Labour
	bu/ac	$/ac	$/ac	$/a	$ net returns/ labour hr
Corn 1986-1989 (aggregate data)					
Conventional (CI)	122	107	288	162	119
Reduced	117	110	271	155	147
No Till	118	115	269	169	220
Corn 1986-1989 (paired compar.)					
Reduced vs. CI	-3	+1	-13	-4	+8
No Till vs. CI	-3	+7	-16	+6	+62
No Till vs. Reduced	+2	+8	-14	+5	+71
Soybeans 1986-1989 (aggregate)					
Conventional	40	72	213	132	109
Reduced	37	75	187	114	100
No Till	33	96	142	80	98
Spring Grains 1986-1989 (aggregate)					
Conventional	50	56	78	17	12
Reduced	48	59	71	6	4
No Till	26	78	-7	-56	-68
Winter Wheat 1986-1989 (aggregate)					
Conventional	57	88	127	73	64
Reduced	59	92	133	81	84
No Till	54	102	102	52	79

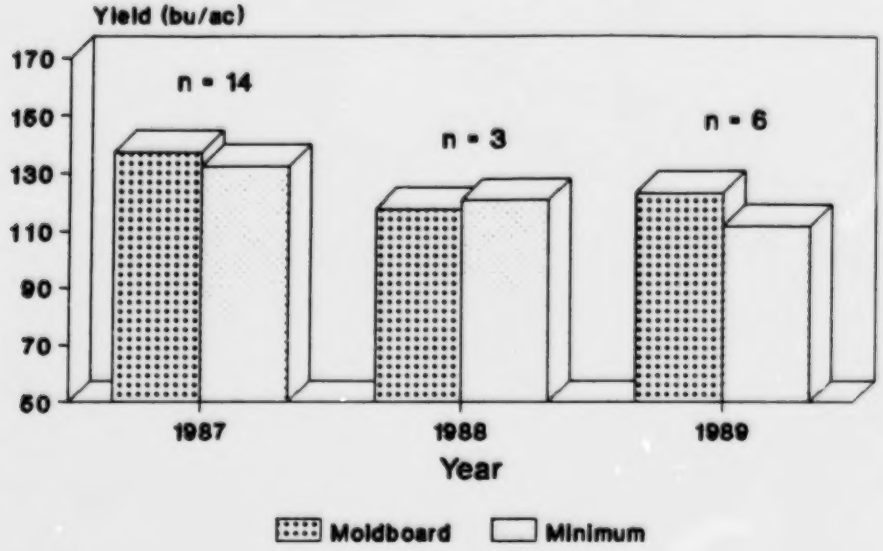
Source: An Economic Evaluation of Tillage 2000 Demonstration Plot Data (1986-1989), Deloitte and Touche, July 1990.

APPENDIX B

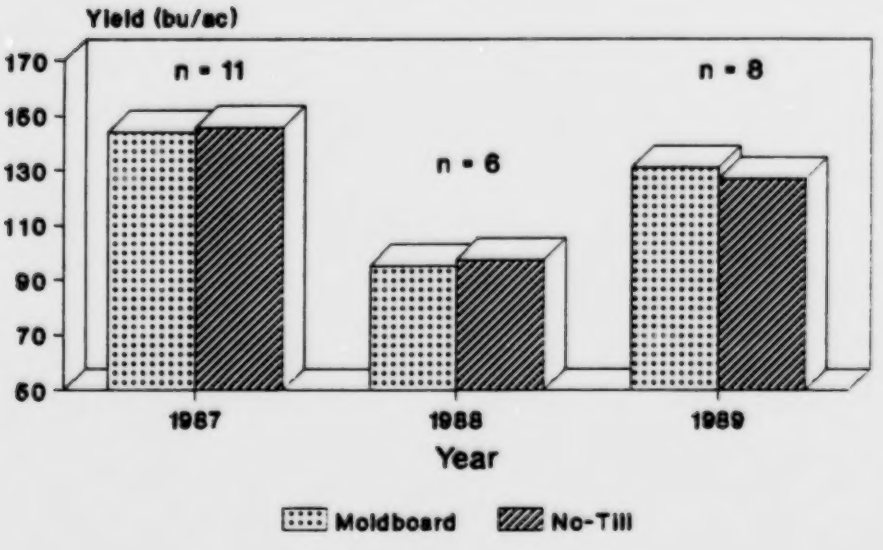
Yield Comparison of Alternative Tillage Systems

GRAIN CORN

Moldboard vs. Minimum



Moldboard vs. No-Till



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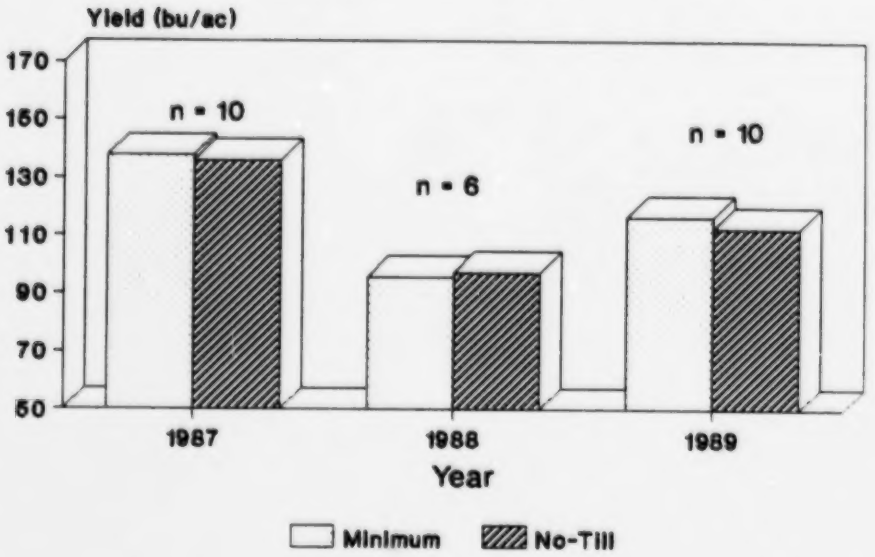
Grain Corn
Minimum vs. No-Till



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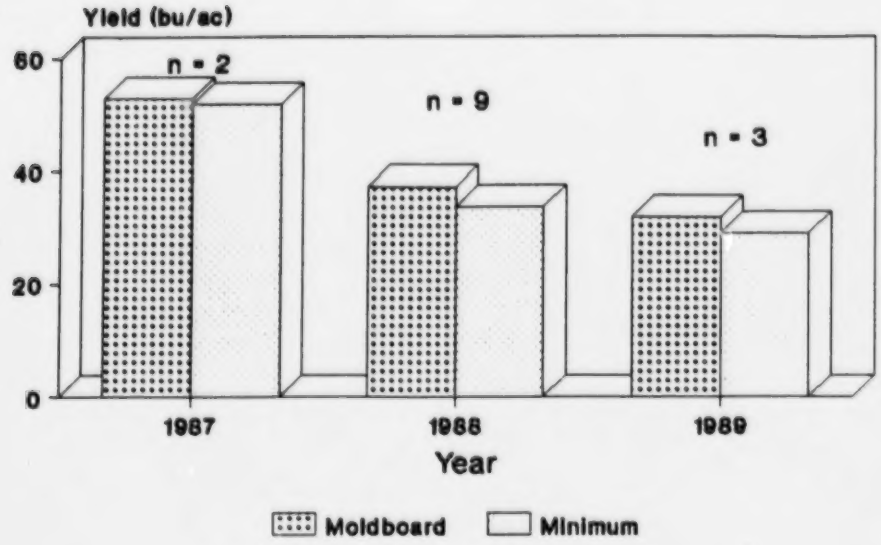
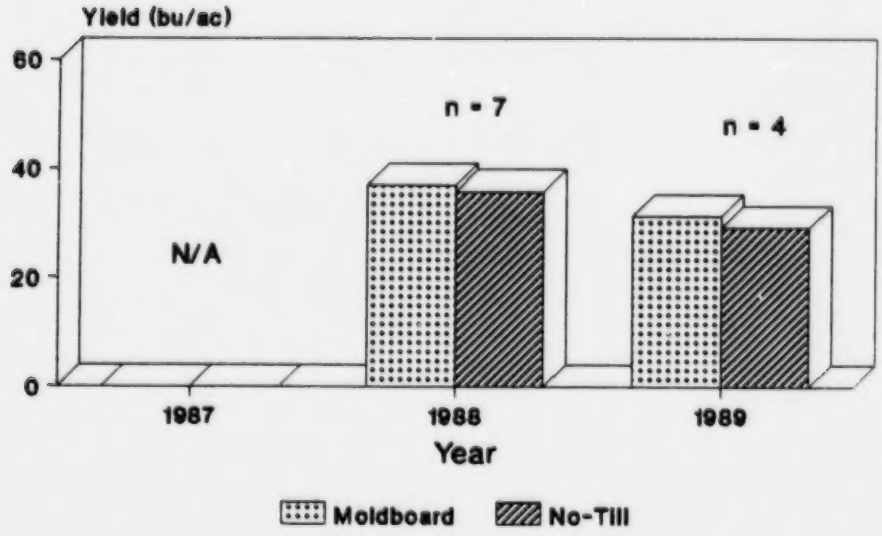
SOYBEANS

Moldboard vs. Minimum



Moldboard vs. No-Till



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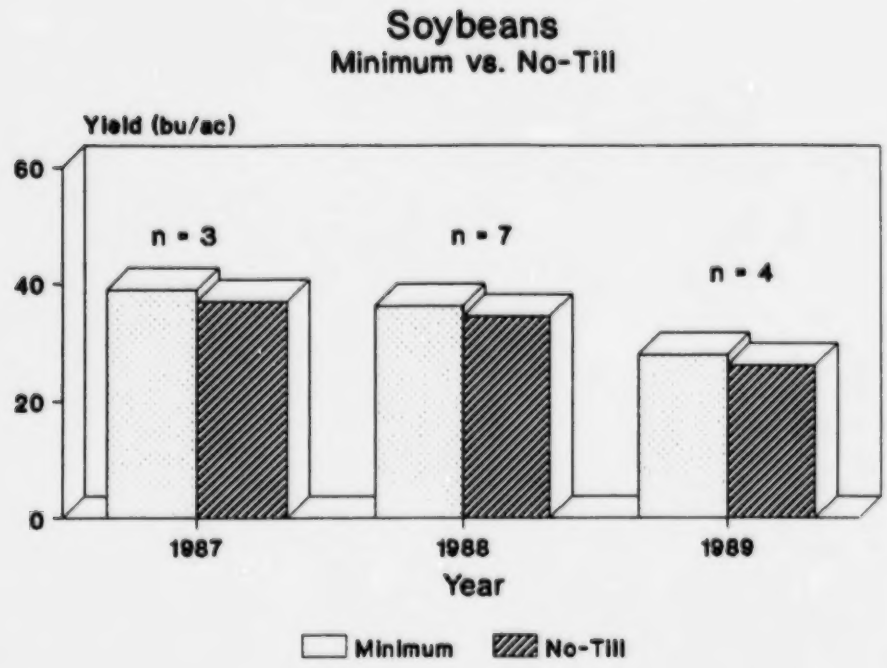


n = # of fields

Source: Tillage 2000 1989 Progress Report, p. 14-15.

APPENDIX C

Barriers To Adoption of Conservation Practices

1. Perceived cost of equipment whether to purchase or to modify.
2. Tradition.
3. Farmer not aware of a problem on their farm.
4. There exists a risk to farmers in that they fear a reduction in income due to losses in yield.
5. Lack of qualified written and verbal advice.
6. Not all technical questions answered.
7. Livestock operations need ways to incorporate manure into their system.
8. Stories of failures from neighbours and media.
9. Lack of systems for specific soil type.

Source: Comments received from OMAF soil advisors involved with the Technical Assistance sub-program, June 1990.

APPENDIX D

OSCEPAP II Program Funding in the SWEEP Area

Environmental Protection

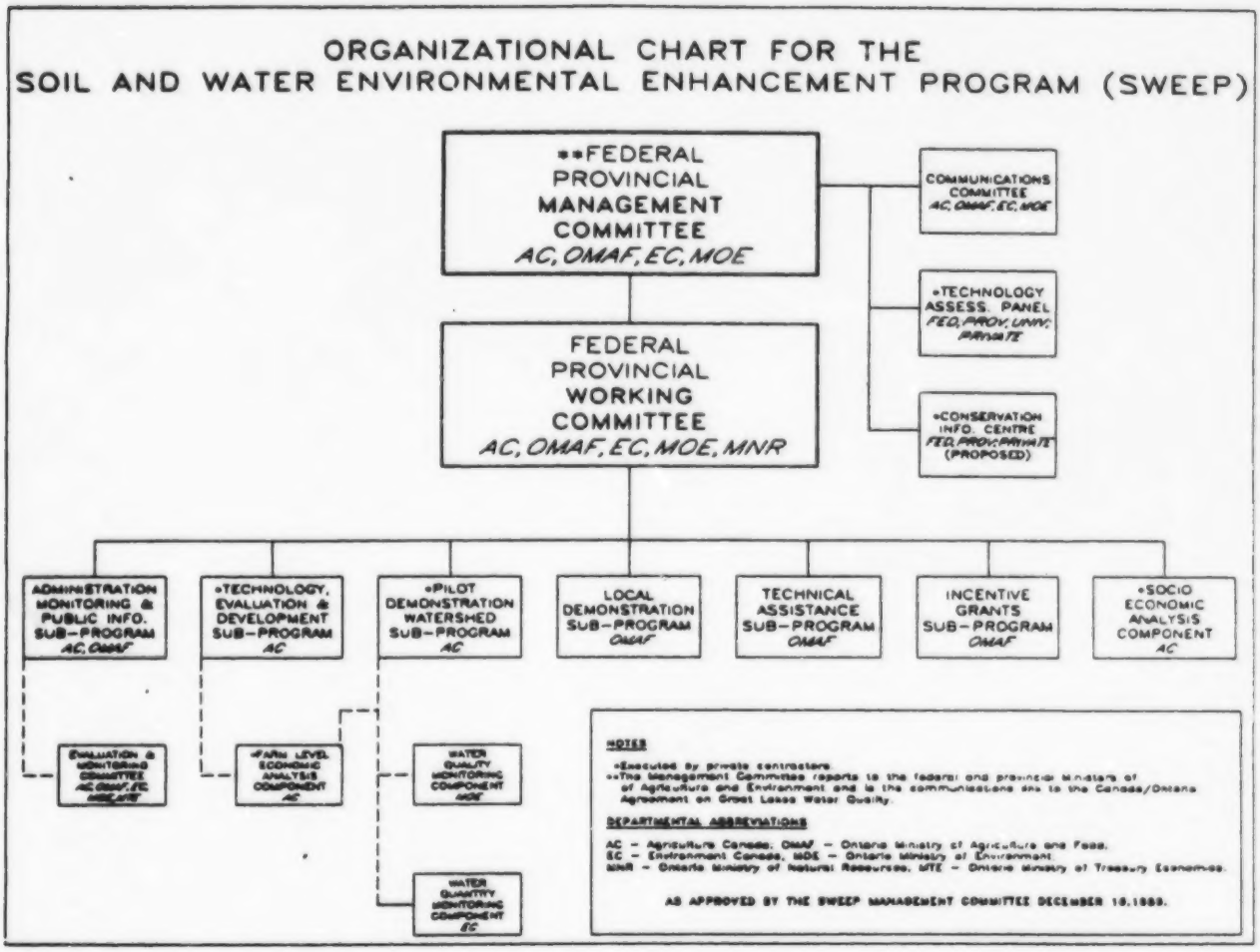
COUNTY	NUMBER OF PROJECTS 1988/89	1989/90	TOTAL EXPENDITURES 1986-1989
Brant	6	4	$ 96,747.30
Dufferin	3	2	43,576.45
Elgin	13	10	170,992.93
Essex	4	4	62,108.08
Haldiman	9	10	169,985.20
Huron	45	20	696,016.67
Kent	13	6	199,344.10
Lambton	10	6	254,339.78
Middlesex	25	18	471,241.38
Norfolk	2	3	45,802.94
Oxford	56	32	796,878.36
Perth	71	30	995,399.91
Waterloo	22	10	291,741.73
Wellington	25	20	458,105.12
TOTAL	**304**	**175**	**$ 4,752,279.95**

Soil Conservation

COUNTY	NUMBER OF PROJECTS 1988/89	1989/90	TOTAL EXPENDITURES 1986-1989
Brant	17	6	$129,821.14
Dufferin	6	4	62,329.47
Elgin	53	26	344,476.42
Essex	55	73	316,161.76
Haldiman	22	9	172,622.30
Huron	34	33	201,922.97
Kent	117	44	401,752.74
Lambton	42	27	302,312.73
Middlesex	33	34	299,524.40
Norfolk	33	15	205,348.93
Oxford	39	42	308,975.62
Perth	46	21	274,532.21
Waterloo	15	8	143,445.59
Wellington	20	9	161,491.59
TOTAL	**532**	**351**	**$ 3,333,717.87**

Source: OSCEPAP Summary - Summary of Grants, as of April 9, 1990.

APPENDIX E



Source: SWEEP Management Committee Policy Book, February 1988, Index #SMC 3.3.

APPENDIX F

Financial Outlook

	1989/90 EXPENDITURES	EXPENDITURES TO DATE (1985-90)
Sub-program 1		
Technical Assessment Panel Conservation Info. Bureau Socio-Economic Evaluation	$213,100	$621,700
Sub-program 2		
Farm Level Economic Analysis TED	$1,670,500	$4,002,800
Sub-program 3		
Pilot Demonstration Watersheds		
Agriculture Canada * MOE * Environment Canada	$965,100	$3,310,200
Sub-program 4		
Local Demonstrations	$353,100	$1,954,000
Sub-program 5		
Technical Assistance	$1,006,100	$5,208,300
Sub-program 6		
Soil Conservation Incentives	$2,284,200	$8,170,900
Sub-program 7		
Administration, Monitoring and Public Information	$282,700	$978,300
TOTAL EXPENDITURES	**$6,774,800**	**$24,246,200**

* Not part of SWEEP agreement funding, and not included in total expenditures.

Source: SWEEP Management Committee Quarterly Reports, 1989/90.
SWEEP ANNUAL REPORT 1988-1989, p. 13.

REFERENCES

1. Comments received from OMAF soil advisors involved with the Technical Assistance sub-program, June 1990.

2. The DPA Group Inc., Soil and Water Environmental Enhancement Program (SWEEP) Evaluation Assessment, March 1987, p. 2-2.

3. SWEEP Evaluation Committee, 1988/89 Progress Review of SWEEP, September 18, 1989, p. 1.

4. OMAF soil advisors, June 1990.

5. Tillage 2000 1989 Progress Report, p. 19.

6. Tillage 2000 1988 Progress Report, p. 16.

7. OMAF soil advisors, June 1990.

8. OSCEPAP Summary - Summary of Grants, as of April 9, 1990.